

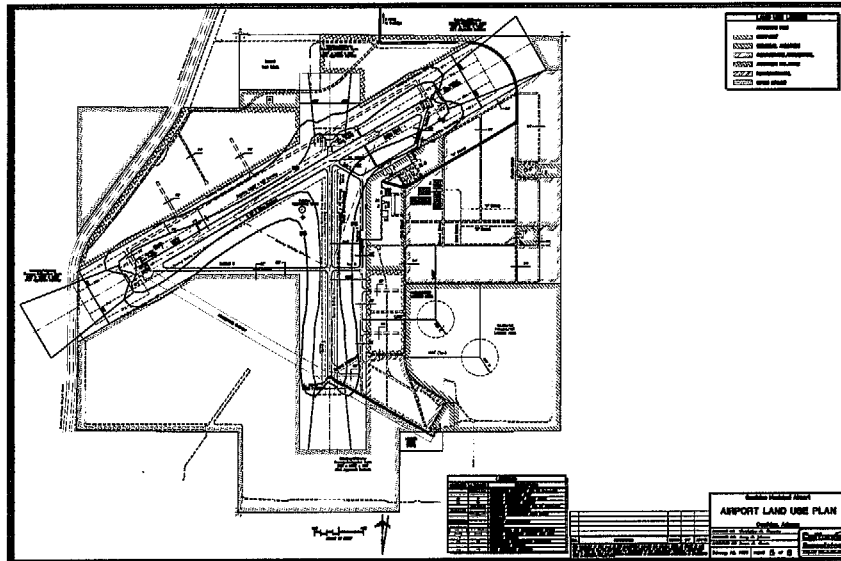
COOLIDGE
◊ MUNICIPAL AIRPORT ◊

Chapter Five
AIRPORT PLANS

Chapter Five

AIRPORT PLANS

COOLIDGE
MUNICIPAL AIRPORT



The intent of the master planning process, thus far, has been to project aviation demand through the planning period and to establish the airside and landside facilities required to accommodate that expected demand. In the preceding chapter, an evaluation was made of the options for the future development of the projected airside and landside facility needs. Through this process, an airport development concept has evolved. The purpose of this chapter, therefore, is to describe in narrative and graphic form, the recommended direction for the future use and development of Coolidge Municipal Airport through the 20-year planning period of this master plan.

RECOMMENDED MASTER PLAN CONCEPT

Following the presentation of the a Phase I report (Chapters 1, 2, 3, and 4 of the

Master Plan) to the Planning Advisory Committee; airside, landside, and land use alternatives were refined into the recommended master plan concept. The following narrative will provide an overview of the refinements which have been made to the analysis and the resulting recommendations.

AIRFIELD RECOMMENDATIONS

The recommended master plan concept includes improvements for the runways, taxiways, navigational aids and airfield lighting. The following pages discuss planned airfield improvements in greater detail.

Review Of Airfield Design Standards

As the focal point of the airport, airfield facilities require the greatest commitment of land, and as such, define the location of surrounding

landside facilities. The design and safety standards pertaining to airfield facilities are based primarily upon the characteristics of the critical design aircraft expected to use the airport. The critical design aircraft is the most demanding aircraft or "family" of aircraft which will conduct 500 or more operations (take-offs and landings) per year at the airport. *FAA Advisory Circular 150/5300-13, Airport Design*, is the primary reference for the design of airfield facilities. Within this advisory circular, a coding system has been established that identifies an airport's critical design aircraft. This design aircraft code, referred to as the Airport Reference Code (ARC), is a function of the critical design aircraft's approach speed and wingspan (the ARC was previously discussed in Chapter Three).

Coolidge Municipal Airport is utilized by a variety of aircraft ranging from small single and multi-engine piston aircraft to business turboprop and turbojet aircraft. The airport is occasionally used by C-130 military aircraft to transport military personnel conducting parachute training at the airport. Single and multi-engine piston aircraft currently comprise the majority of operations at the airport. Business turboprop and turbojet aircraft operations are currently limited and total less than 500 operations per year. The airport can, however, expect an increase in the use of business turboprop and turbojet aircraft during the planning period.

The size and weight of the C-130 military transport aircraft make it the most demanding aircraft to operate at the airport; however, C-130 use of the airport currently falls short of the

minimum FAA requirement to be defined as the critical design aircraft. A substantial increase in the use of the C-130 is not expected at the airport. The existing airfield facilities at Coolidge Municipal Airport can support occasional use by C-130 aircraft. The Runway 5-23 width and Taxiway 6 centerline to Runway 5-23 centerline distance exceeds design standards applicable to the C-130. In addition, the size of the apron and location of landside facilities provide sufficient and safe movement areas for the C-130. Since movement of the C-130 is expected to be limited to existing airside areas, it will not be necessary to design and construct future airfield facilities to C-130 design standard. Therefore, common business turboprop and turbojet aircraft within ARC C-II will be used as the future critical design aircraft at Coolidge Municipal Airport.

As the primary runway, Runway 5-23 should be designed to accommodate the critical design aircraft. As mentioned, this includes common business turboprop and turbojet aircraft within ARC C-II. Since Runway 17-35 serves as a secondary runway for small or general aviation aircraft during crosswind conditions, a less demanding ARC of B-II can be applied to the design standards associated with Runway 17-35. The airport planning standards derived from these ARC's and used in the ultimate design and layout of the airport are summarized in Table 5A.

Runways

The analyses conducted in the previous chapters concluded that the existing

TABLE 5A Airfield Planning and Design Standards (Ultimate)		
	Runway 5-23	Runway 17-35
Airport Reference Code	C-II	B-II
Approach Visibility Minimums	One-Mile	Visual
<u>Runways</u>		
Length (feet)	5,550	3,740
Width (feet)	100	75
Runway Safety Area		
Width (feet)	400	150
Length Beyond Runway End (feet)	1,000	300
Object Free Area		
Width (feet)	800	500
Length Beyond Runway End (feet)	1,000	300
Runway Centerline to Parallel Taxiway Centerline (feet)	300	240
Runway Centerline to Edge of Aircraft Parking Apron (feet)	400	250
Runway Centerline to 35-foot Building Height (feet)	495	595
<u>Runway Protection Zones</u>		
Inner Width (feet)	500	500
Outer Width (feet)	1,010	700
Length (feet)	1,700	1,000
Approach Slope Surface	34:1	20:1
<u>Taxiways</u>		
Width (feet)	35	
Safety Area Width (feet)	79	
Object Free Area Width (feet)	131	
Taxiway Centerline to Parallel Taxiway/Taxilane Centerline (feet)	105	
Taxiway Centerline to Fixed or Moveable Object (feet)	65.5	
Wingtip Clearance (feet)	26	
<u>Taxilanes</u>		
Taxilane Centerline to Parallel Taxilane Centerline (feet)	97	
Taxilane Centerline to Fixed or Moveable Object (feet)	57.5	
Taxilane Object Free Area (feet)	115	
Wingtip Clearance (feet)	18	
Source: FAA Advisory Circular 150/5300-13, Airport Design		

length, width, and pavement strength of both runways are capable of serving all aircraft expected to utilize the airport. While the existing length of Runway 5-23 may prevent some long stage length flights on the warmest days of the year, the existing runway length is sufficient for the majority of

business aircraft with flights to regional markets. A review of FAA airport design standards indicated that the existing 150-foot width of Runway 5-23 exceeds the FAA standard of 100 feet for runways serving business turboprop and turbojet aircraft in ARC C-II. When Runway 5-23 requires

reconstruction, it is possible that the FAA may only participate in funding the reconstruction of Runway 5-23 to 100 feet. A wind analysis concluded that both runways are needed to ensure safe operating conditions for all aircraft.

Taxiways

Currently, taxiway access is not available to the Runway 35 end. To reach this runway end, aircraft must back-taxi along the runway and turn around at the runway threshold. Establishing a holding apron at the Runway 35 threshold would provide an area off the runway for aircraft to turn around and prepare for departure without occupying the runway.

Two portions of Taxiway 1 are closed due to deteriorated pavement: an 800-foot portion of Taxiway 1 between Taxiways 3 and 4 and the portion of Taxiway 1 between Taxiways 3 and 2.

Reconstructing the closed portion of Taxiway 1 between Taxiways 3 and 4 would provide taxiway access on all sides of the apron and eliminate the need for aircraft to taxi along the apron. Reconstructing the closed portion of Taxiway 1 between closed Taxiway 2 and Taxiway 3 would provide direct access to the Runway 35 end and could be used by businesses with a need for airfield access who could construct facilities in the area along the taxiway.

While a parallel taxiway on either side of Runway 5-23 is not required (based upon current and projected activity), should property north of Runway 5-23 be developed and businesses locating

there desire airfield access, a parallel taxiway might be required to provide efficient and direct access to the airfield. The reflection of this parallel taxiway on the official Airport Layout Plans ensures that any future development in this area takes into account the location of the parallel taxiway and minimum set back and object free areas.

Airfield Lighting

Pavement edge lighting is recommended for Runway 17-35 and Taxiways 1, 3, 5 which are currently without lighting. Pavement edge lighting would enhance the safety of operations along the taxiway surfaces at night and allow for night operations to Runway 17-35. Pavement edge lighting should be included as part of the reconstruction projects for the closed portions of Taxiway 1 and Taxiway 2 as well.

The landing phase of flights to the airport will be enhanced with the installation of PAPI's to each runway end at the airport. PAPI's assist pilots in determining the correct approach path to the runway end. REIL's aid pilots in locating the runway end at night and during poor visibility conditions. REIL's will enhance the safety of operations to the existing Runway 5 VOR/DME approach and Runway 23 GPS approach.

GENERAL AVIATION RECOMMENDATIONS

Following the development of general aviation alternatives and discussions with the Planning Advisory Committee

(PAC), it became evident that some modification of the alternatives as presented in the previous chapter was needed to ensure the most efficient layout for future general aviation facilities. Members of the PAC recommended combining both T-hangar and corporate/individual hangar development along the northern apron area and reserving the remaining apron area for general aviation development. Members of the PAC indicated that the prevailing wind condition at the airport flows parallel with the northern apron and that this creates difficulty for aircraft that tie-down along this portion of the apron. Generally, it is preferable that aircraft tie-down facing the prevailing wind flow.

The recommended facility layout places future T-hangar development on the northern apron area to take advantage of excess apron area and reduce taxiway and hangar development costs. The area along the northeast portion, between A Street and the apron, is reserved for corporate/individual hangar development. A taxiway connecting to the apron is planned to provide airfield access to four 100-foot by 100-foot parcels. A public parking area between A Street and the apron is planned to serve both hangar areas.

The remaining apron area is reserved for the development of other general aviation or skydiving facilities and aircraft tie-down. A future large conventional hangar (similar in size to the existing conventional hangar) is recommended south of the existing terminal building. Large conventional hangars are best placed along the edge

of the apron as opposed to constructing them on available apron area (which is an option for T-hangars). Generally, large conventional hangars serve as maintenance facilities in addition to providing areas for aircraft storage. As a result, a large apron area in front of the hangar is required to facilitate maintenance and storage activities. A public terminal building is recommended to replace the existing administration/FBO building. A paved parking area is planned for the area between 1st Street and the future public terminal building.

The PAC also recommended providing airfield access to Data Sales which has area available for enclosed aircraft storage. A taxiway extending east from the apron to Data Sales is depicted to ultimately provide direct airfield access from Data Sales. To prevent encroachment on the taxiway by vehicle traffic, First Street is planned to be closed between A Street and D Street. A Street will then terminate in the planned paved parking area serving the planned public terminal building and existing large conventional hangar. To access the south portion of the apron, vehicles would follow A Street to Second Street, south to D Street, then west to First Street.

Future fuel storage facilities are recommended to be located on the apron near the existing fuel island. This offers the possibility of creating a self-service fuel island while eliminating the need for mobile fuel trucks to dispense fuel (which would be required if a future fuel storage facility was located off the apron).

LAND USE RECOMMENDATIONS

Several land use categories have been developed for the airport and include: airfield operations, general aviation, commercial/industrial, aviation-related commercial/industrial, support, and recreation. These land use recommendations are detailed on the On-Airport Land Use Plan included with the Airport Layout Plan set. These land use categories are intended to secure the functional elements of the airport and provide areas for general aviation development and areas for local economic development. The following provides a brief discussion of each land use category.

Airfield Operations: The airfield operations area is the most critical category of land use since it includes all areas necessary for the safe operation on the airside of the airport. The included items are runway and taxiway safety areas and runway approach surfaces. This includes the existing runways, taxiways, and areas within the building restriction lines and runway protection zones.

General Aviation: Future general aviation development should be directed to existing apron area. T-hangar and corporate/individual hangar development should be directed to the northern apron area while commercial general aviation development should be reserved for the south apron area. A reserve area on each end of the apron has been established for long-term growth.

Commercial/Industrial: The area east of Runway 17-35 and the general aviation reserve area is reserved for commercial/industrial development.

This area is intended for businesses with no need for airfield access.

Aviation-related Commercial/Industrial: Two areas on the airport have been designated for development by businesses with a need for airfield access. This includes the area south from Taxiway 3 to Taxiway 2 and the area north of Runway 5-23.

Support: Support facilities includes the existing water wells, parachutist landing area, and future waste water treatment plant. Reserve areas for each of these areas has been designated on the land use plan.

Recreation: An area north of the taxiway connecting the south hangar to the Runway 35 threshold has been reserved for the development of a camping and recreational area for pilots flying into the Coolidge Municipal Airport.

LAND USE COMPATIBILITY

The purpose of the land use compatibility plan is to describe a pattern of land uses around the airport which will be most compatible with activities on the airport. The importance of the airport to local and regional economic growth indicates the need for all area governmental jurisdictions to be concerned with protecting a major public investment that is virtually irreplaceable.

The two primary concerns for land use compatibility are maintaining operationally safe and obstruction free approaches and minimizing impacts

due to aircraft noise. The following two sections discuss recommendations for both concerns.

OPERATIONAL PROTECTION

Development within the operational airspace of aircraft using the airport can have an impact on the safe operation of the airport. Because large areas can be affected by the need to constrain heights of objects, zoning is generally the most reasonable and effective means of protection.

To protect the airspace and approaches to each runway end from hazards that could affect the safe and efficient operation of aircraft arriving and departing the airport, Federal Aviation Regulations (FAR) Part 77, Objects Affecting Navigable Airspace, have been established for use by local planning and land use jurisdictions to control the height of objects near the airport. Currently, there is no height and hazard zoning ordinance in place to protect the approaches to the airport. To ensure the safety of aircraft arriving and departing the airport and the ability to establish future GPS approaches to Runways 5 and 23, the City of Coolidge in conjunction with Pinal County should establish a height and hazard zoning ordinance based upon FAR Part 77 for Coolidge Municipal Airport. The Part 77 Airspace Plan prepared for this master plan is a graphic depiction of the Part 77 regulatory criterion applicable to the recommendations of this master plan.

An additional recommendation for airport operational protection is the direct control of property within the

airport's approaches. At a minimum, this should include all areas within the runway protection zone (RPZ). A portion of both the Runway 5 and Runway 23 RPZ falls outside of the existing property line. The purchase of 12 acres of property (or an aviation easement) is recommended to gain operational control over the Runway 5 RPZ. The purchase of 2 acres (or an aviation easement) is recommended to protect the Runway 23 RPZ.

NOISE COMPATIBILITY

This section assesses the expected future noise impacts of airport operations on the land surrounding the airport. Aircraft noise emissions are often the most noticeable environmental effect an airport will produce on the surrounding community. If the sound is sufficiently loud or frequent in occurrence, it may interfere with various activities or otherwise be considered objectionable. To determine noise related impacts that the proposed airport development could have on the environment surrounding the airport, future noise exposure patterns have been analyzed.

The basic methodology employed to define aircraft noise levels involves the extensive use of a mathematical model for aircraft noise prediction. The day-night average sound level (DNL) is used in this study to assess aircraft noise. DNL is the metric currently accepted by the FAA, Environmental Protection Agency, and the Department of Housing and Urban Development as an appropriate measure of cumulative noise exposure. Federally funded airport noise studies use DNL as the primary metric for evaluating noise.

DNL is defined as the average A-weighted sound level as measured in decibels, during a 24-hour period. A 10-decibel penalty is applied to noise events occurring at night (10:00 p.m. to 7:00 a.m.). DNL is a summation metric which allows objective analysis and can describe noise exposure comprehensively over a large area.

Since noise decreases at a consistent rate in all directions from a source, points of equal DNL noise levels are indicated by means of a contour line. It is important to recognize that a line drawn on a map does not imply that a particular noise condition exists on one side of the line and not on the other. DNL calculations do not precisely define noise impacts. Nevertheless, DNL contours can be used to: 1) highlight existing or potential incompatibilities between an airport and any surrounding development; 2) assess relative exposure levels; 3) assist in preparation of airport environs land use plans; and 4) provide guidance in the development of land use control devices, such as zoning ordinances, subdivision regulations and building codes.

The use of a computerized noise prediction model is required in noise studies because the development of noise contours directly from field studies would require months of measurement at numerous noise measurement sites - a very impractical, extremely expensive, and time-consuming method of evaluation.

The noise contours for the airport were developed from the FAA approved Integrated Noise Model, Version 5.0. The Integrated Noise Model (INM) was developed by the Transportation

Systems Center of the U.S. Department of Transportation at Cambridge, Massachusetts, and has been specified by the FAA as one of two models acceptable for federally funded noise analysis. The INM is a computer model which accounts for each aircraft along flight tracks during an average 24-hour period. These flights tracks are coupled with separate tables contained in the data base of the INM which relate to noise, distance and engine thrust for each distinct aircraft type selected.

An analysis of future noise levels at the airport, assuming all proposed development and forecast operational activity, has been completed for this study. The noise contours representing forecast operational activity have been graphically depicted on the On-Airport Land Use/Noise Plan. As shown on the plan, all future noise contours are expected to remain within airport property.

COMPATIBLE LAND USE

The implications of the DNL contours are interpreted with reference to land use compatibility criteria. The criteria use in this study are based on the guidelines contained in FAR Part 150, as shown in **Exhibit 5A**. A review of the table reveals that the land uses which are most sensitive to noise are residences, churches, schools, hospitals, and nursing homes. A review of the land uses around the Coolidge Municipal Airport indicates that there are currently no noise sensitive land uses near the airport. The majority of land surrounding the airport is currently open or used for agricultural or grazing purposes. While it is not

LAND USE	Yearly Day-Night Average Sound Level (DNL) in Decibels					
	Below 65	65-70	70-75	75-80	80-85	Over 85
RESIDENTIAL						
Residential, other than mobile homes and transient lodgings	Y	N ¹	N ¹	N	N	N
Mobile home parks	Y	N	N	N	N	N
Transient lodgings	Y	N ¹	N ¹	N ¹	N	N
PUBLIC USE						
Schools	Y	N ¹	N ¹	N	N	N
Hospitals and nursing homes	Y	25	30	N	N	N
Churches, auditoriums, and concert halls	Y	25	30	N	N	N
Government services	Y	Y	25	30	N	N
Transportation	Y	Y	Y ²	Y ³	Y ⁴	Y ⁴
Parking	Y	Y	Y ²	Y ³	Y ⁴	N
COMMERCIAL USE						
Offices, business and professional	Y	Y	25	30	N	N
Wholesale and retail-building materials, hardware and farm equipment	Y	Y	Y ²	Y ³	Y ⁴	N
Retail trade-general	Y	Y	25	30	N	N
Utilities	Y	Y	Y ²	Y ³	Y ⁴	N
Communication	Y	Y	25	30	N	N
MANUFACTURING AND PRODUCTION						
Manufacturing, general	Y	Y	Y ²	Y ³	Y ⁴	N
Photographic and optical	Y	Y	25	30	N	N
Agriculture (except livestock) and forestry	Y	Y ⁶	Y ⁷	Y ⁸	Y ⁸	Y ⁸
Livestock farming and breeding	Y	Y ⁶	Y ⁷	N	N	N
Mining and fishing, resource production and extraction	Y	Y	Y	Y	Y	Y
RECREATIONAL						
Outdoor sports arenas and spectator sports	Y	Y ⁵	Y ⁵	N	N	N
Outdoor music shells, amphitheaters	Y	N	N	N	N	N
Nature exhibits and zoos	Y	Y	N	N	N	N
Amusements, parks, resorts, and camps	Y	Y	Y	N	N	N
Golf courses, riding stables, and water recreation	Y	Y	25	30	N	N

The designations contained in this table do not constitute a Federal determination that any use of land covered by the program is acceptable under Federal, State, or local law. The responsibility for determining the acceptable and permissible land uses and the relationship between specific properties and specific noise contours rests with the local authorities. FAA determinations under Part 150 are not intended to substitute federally determined land uses for those determined to be appropriate by local authorities in response to locally determined needs and values in achieving noise compatible land uses.

See other side for notes and key to table.

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KEY

Y (Yes)	Land Use and related structures compatible without restrictions.
N (No)	Land Use and related structures are not compatible and should be prohibited.
NLR	Noise Level Reduction (outdoor to indoor) to be achieved through incorporation of noise attenuation into the design and construction of the structure.
25, 30, 35	Land Use and related structures generally compatible; measures to achieve NLR of 25, 30, or 35 dB must be incorporated into design and construction of structure.

NOTES

- 1 Where the community determines that residential or school uses must be allowed, measures to achieve outdoor to indoor Noise Level Reduction (NLR) of at least 25 dB and 30 dB should be incorporated into building codes and be considered in individual approvals. Normal residential construction can be expected to provide a NLR of 20 dB, thus, the reduction requirements are often stated as 5, 10, or 15 dB over standard construction and normally assume mechanical ventilation and closed windows year round. However, the use of NLR criteria will not eliminate outdoor noise problems.
- 2 Measures to achieve NLR of 25 dB must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas, or where the normal noise level is low.
- 3 Measures to achieve NLR of 30 dB must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas, or where the normal noise level is low.
- 4 Measures to achieve NLR of 35 dB must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas, or where the normal noise level is low.
- 5 Land use compatible provided special sound reinforcement systems are installed.
- 6 Residential buildings require a NLR of 25.
- 7 Residential buildings require a NLR of 30.
- 8 Residential buildings not permitted.

Source: **F.A.R. Part 150**, Appendix A, Table 1.

Continued
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expected that any future land uses around the airport will be within any of the airport's noise contours, utilizing the land use guidelines as summarized on **Exhibit 5A** will ensure the compatibility of the airport with future growth and development near the airport.

AIRPORT LAYOUT PLANS

The remainder of this chapter provides a brief description of the official layout drawings for the airport that will be submitted to the FAA for approval. These plans, referred to as Airport Layout Plans, have been prepared to graphically depict the ultimate airfield layout, land uses, facility development, and airspace. This set of plans includes:

- Airport Layout Plan
- Terminal Area Plan
- Part 77 Airspace Plan
- Runway End Area Plans
- On-Airport Land Use Plan
- Property Map

The airport layout plan set has been prepared on a computer-aided drafting system for future ease of use. The computerized plan set provides detailed information of existing and future facility layout on multiple layers that permit the user to focus in on any section of the airport at a desirable scale. The plan can be used as base information for design, and can be easily updated in the future to reflect new development and more detail concerning existing conditions as made available through design surveys. The plan is also being provided in a 24-inch by 36-inch reproducible hard copy in

accordance with current FAA standards. The airport layout plan set is submitted to the FAA for approval and must reflect all future development for which federal funding is requested. Otherwise, the proposed development will not be eligible for federal funding. Therefore, updating these drawings to reflect changes in existing and ultimate facilities is essential.

AIRPORT LAYOUT PLAN

The Airport Layout Plan (ALP) drawing graphically presents the existing and ultimate airport layout. Detailed airport and runway data are provided to facilitate the interpretation of the master plan recommendations. Both airfield and landside improvements are depicted.

TERMINAL AREA PLAN

The Terminal Area Plan provides greater detail concerning landside improvements and at a larger scale than the on the ALP. The terminal area plan includes detail concerning existing and ultimate general aviation facilities located along the existing apron area.

FAR PART 77 AIRSPACE PLAN

The Part 77 Airspace Plan is a graphic depiction of Federal Aviation Regulations (FAR) Part 77, Objects Affecting Navigable Airspace, regulatory criterion. The Part 77 Airspace Plan can aid local authorities in determining if proposed development could present a hazard to the airport

and obstruct the approach path to a runway end. Under FAR Part 77, the existing approaches to Runways 5 and 23 are considered nonprecision instrument approaches.

The Part 77 Airspace Plan assigns three-dimensional imaginary areas to each runway. These imaginary surfaces emanate from the runway centerline and are dimensioned according to the visibility minimums associated with the approach to the runway end and size of aircraft to operate on the runway. The Part 77 imaginary surfaces include the primary surface, approach surface, transitional surface, horizontal surface, and conical surface. Part 77 imaginary surfaces are described in the following paragraphs.

Primary Surface

The primary surface is an imaginary surface longitudinally centered on the runway. The primary surface extends 200 feet beyond each runway end and its width is determined by the type of approach established for that runway end (i.e., visual, non-precision, precision). The elevation of any point on the primary surface is the same as the elevation along the nearest associated point on the runway centerline. Under Part 77 regulations, the primary surface for the existing and future non-precision (one mile visibility) approaches to Runways 5 and 23 is 500 feet wide. The primary surface for the existing and future visual approaches to Runway 17-35 is 500-foot wide as well.

Situated adjacent to the runway and taxiway system, the primary surface

must remain clear of unnecessary objects to allow for the unobstructed passage of aircraft. Within the primary surface, objects are only permitted if they are no taller than two feet above the ground and if they are constructed on frangible (breakaway) fixtures. The only exception to the two-foot height requirement is for objects whose location is fixed by function. A visual approach slope indicator (VASI) system is an example of an object which falls within the category of "fixed by function."

Approach Surface

An approach surface is also established for each runway. The approach surface begins at the same width as the primary surface and extends upward and outward from the primary surface end centered along an extended runway centerline. The upward slope and length of the approach surface is determined by the type of approach (existing and/or planned) to the runway end. The approach surface for the existing and future non-precision (one-mile visibility) approaches to Runways 5 and 23 extends 10,000 feet from the end of the primary surface at an upward slope of 34 to 1 to a width of 3,500 feet. The approach surface for the existing and future visual approaches to Runways 17 and 35 extends 5,000 feet from the primary surface end at an upward slope of 20:1 to a width of 1,500 feet.

Transitional Surface

Each runway has a transitional surface that begins at the outside edge of the primary surface at the same elevation

as the runway. The transitional surface also connects with the approach surfaces of each runway. The surface rises at a slope seven to one up to a height which is 150 feet above the highest runway elevation. At that point, the transitional surface is replaced by the horizontal surface. The transitional surface defines the location of the building restriction line.

Horizontal Surface

The horizontal surface is established at 150 feet above the highest elevation of the runway surface. Having no slope, the horizontal surface connects the transitional and approach surfaces to the conical surface at a distance of 10,000 feet from the primary surfaces of each runway.

Conical Surface

The conical surface begins at the outer edge of the horizontal surface. The conical surface then continues for an additional 4,000 feet horizontally at a slope of 20 to 1. Therefore, at 4,000 feet from the horizontal surface, the elevation of the conical surface is 350 feet above the highest airport elevation.

RUNWAY END AREA PLANS

The Runway End Area Plan drawing is a scaled drawing of the runway protection zone (RPZ), runway safety area (RSA), and object free area (OFA) for each runway end. A plan and profile view of each RPZ is provided to facilitate identification of obstructions that lie within these safety areas. Detailed obstruction and facility data is

provided to identify planned improvements and the disposition of obstructions.

ON-AIRPORT LAND USE PLAN

The On-Airport Land Use Plan is a graphic depiction of the previously discussed land use recommendations. When development is proposed it should be directed to the appropriate land use area depicted on this plan. This plan also provides a depiction of the future noise contours for the airport.

PROPERTY MAP

The Property Map provides information on the acquisition and identification of all land tracts acquired by the airport.

The existing airport site was conveyed to the City of Coolidge on March 2, 1959 by Quitclaim Deed from Pinal County. As noted on the property map, the existing airport site contains property conveyed under Section 16 of the Federal Airport Act. A special requirement under the Section 16 patent is that the land be used for the development of an airport and that prior to non-aeronautical use these areas must be released from the patent. The remaining portions of the existing airport site were transferred as surplus property pursuant to the provisions of the Federal Property and Administrative Service Act of 1949, Surplus Property Act of 1944. The City of Coolidge leases a five acre parcel of land from the Arizona State Land Department and a 40 acre parcel of land from the United States Bureau of Land Management. The property map

notes the acquisition of a 12 acre aviation easement to protect the Runway 5 runway protection zone and a 2 acre aviation easement to protect the Runway 23 runway protection zone.

SUMMARY

The airport layout plan set is designed to assist the City of Coolidge in making decisions relative to future development and growth at Coolidge Municipal Airport. The plan provides for development to satisfy expected airport needs over the next twenty years. Flexibility will be a key to future development since activity may not occur as forecast. The plan has

considered demands that could be placed upon the airport even beyond the twenty year planning period to ensure that the facility is capable of accommodating a variety of circumstances. The F.A.R. Part 77 Airspace Plan should be used as a tool to ensure land use compatibility and restriction of the heights of future structures or antennae which pose a hazard to air navigation. The ALP set also provides the City of Coolidge with options to pursue in marketing the assets of the airport for community development. Following the general recommendations of the plan, the airport can maintain it's long term viability and continue to provide air transportation services to the region.

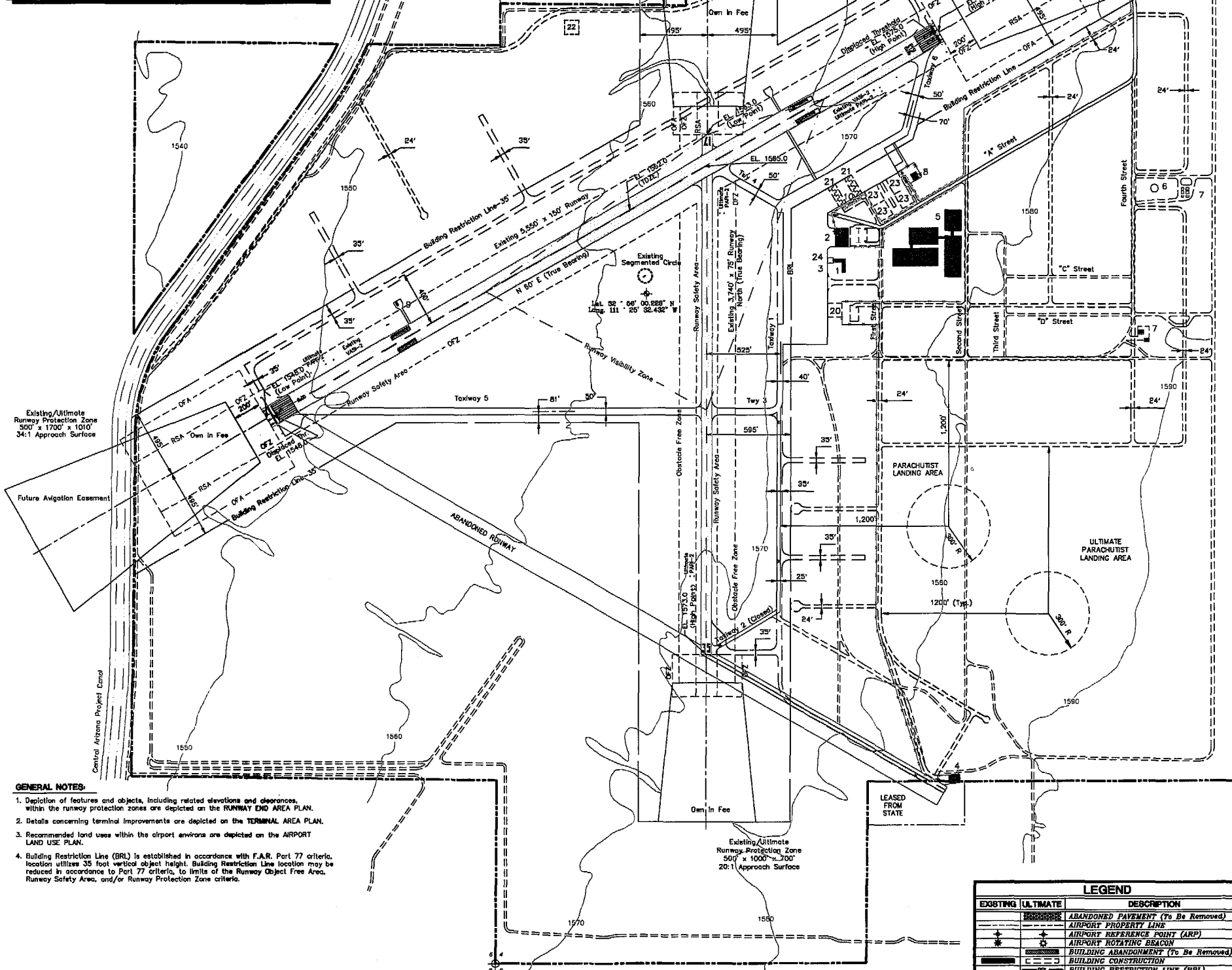
AIRPORT LAYOUT PLANS FOR COOLIDGE MUNICIPAL AIRPORT COOLIDGE, ARIZONA

Prepared for the
City of Coolidge, Arizona

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BUILDINGS/FACILITIES		
EXISTING	ULTIMATE	DESCRIPTION
1	-	ADMINISTRATION/FBO
2	20	CONVENTIONAL HANGAR
3	-	UNDERGROUND FUEL STORAGE FACILITY
4	-	SOUTH HANGAR
5	-	DATA SALON
6	-	WATER TOWER
7	-	WATER WELL and TANKS
8	-	FIRE EQUIPMENT COMPOUND (not in use)
9	-	RUNWAY SUPERVISORY UNIT (abandoned)
10	-	ELECTRICAL VAULT
21	-	T-HANGAR (Nestled, 6 units)
22	-	WASTE WATER TREATMENT FACILITY
23	-	CORPORATE PARCELS
24	-	PUBLIC TERMINAL/ADMINISTRATION BUILDING



- GENERAL NOTES:**
1. Depiction of features and objects, including related elevations and clearances, within the runway protection zones are depicted on the RUNWAY END AREA PLAN.
 2. Details concerning terminal improvements are depicted on the AIRPORT LAND USE PLAN.
 3. Recommended land uses within the airport environs are depicted on the AIRPORT LAND USE PLAN.
 4. Building Restriction Line (BRL) is established in accordance with F.A.R. Part 77 criteria. Location utilizes 35 foot vertical object height. Building Restriction Line location may be reduced in accordance to Part 77 criteria, to limits of the Runway Object Free Area, Runway Safety Area, and/or Runway Protection Zone criteria.

MODIFICATIONS OF FAA AIRPORT DESIGN STANDARDS			
DEVIATION DESCRIPTION	EFFECTED DESIGN STANDARD	AIRSPACE CASE NUMBER	APPROVAL DATE
None			

LEGEND		
EXISTING	ULTIMATE	DESCRIPTION
		ABANDONED PAVEMENT (To Be Removed)
		AIRPORT PROPERTY LINE
		AIRPORT REFERENCE POINT (ARP)
		AIRPORT ROTATING BEACON
		BUILDING ABANDONMENT (To Be Removed)
		BUILDING CONSTRUCTION
		BUILDING RESTRICTION LINE (BRL)
		DRAINAGE
		FACILITY CONSTRUCTION
		FENCING
		NAVIGATIONAL AID INSTALLATION (GPI)
		RUNWAY THRESHOLD LIGHTS and FUEL
		SECTION CORNER
		SEGMENTED CIRCLE/WIND INDICATOR
		TOPOGRAPHY (Contours)
		WIND INDICATOR (Lighted)

FOR APPROVAL BY:

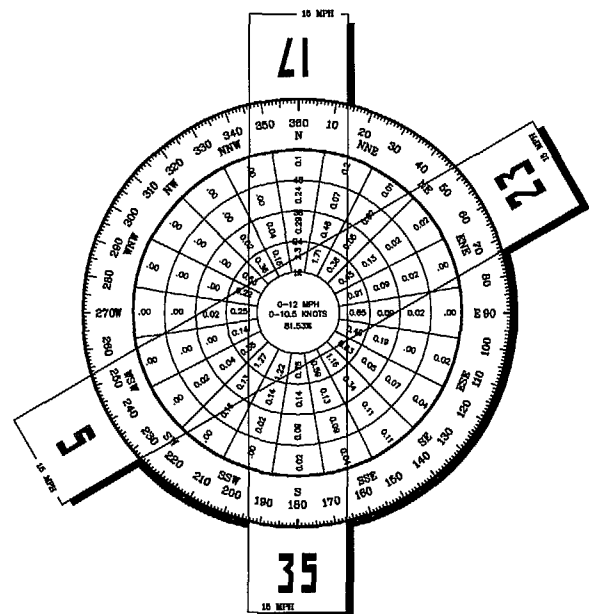
John Boudak
City Manager

DATE: _____

AIRPORT DATA		
CITY: Coolidge, Arizona	COUNTY: Pinal, Arizona	
RANGE: 05 SE	TOWNSHIP: _____	CIVIL TOWNSHIP: _____
COOLIDGE MUNICIPAL AIRPORT		
	EXISTING	ULTIMATE
AIRPORT SERVICE LEVEL	General Aviation	SAME
AIRPORT REFERENCE CODE	C-II	SAME
DESIGN AIRCRAFT	Cessna 441	SAME
AIRPORT ELEVATION	1570.0 MSL	SAME
MEAN MAXIMUM TEMPERATURE OF HOTTEST MONTH	107° F	SAME
AIRPORT REFERENCE POINT (NAD 83)	Latitude 32° 56' 00.228" N	SAME
ARP COORDINATES (GPI)	Longitude 111° 25' 32.432" W	SAME
AIRPORT and TERMINAL NAVIGATIONAL AIDS	GPS	GPS
	Rotating Beacon	Rotating Beacon

RUNWAY DATA	RUNWAY 5-23		RUNWAY 17-35	
	EXISTING	ULTIMATE	EXISTING	ULTIMATE
MAX ELEVATION ABOVE MSL	1575.0	1575.0	1573.0	1573.0
AIRCRAFT APPROACH CATEGORY-DESIGN GROUP	C-II	C-II	B-II	B-II
WIND COVERAGE (18 MPH)	90.8%	90.8%	92.9%	92.9%
RUNWAY BEARING	N 60.0° E	N 60.0° E	North	North
RUNWAY DIMENSIONS	5,550' x 150'	5,550' x 150'	3,740' x 75'	3,740' x 75'
RUNWAY END-PART 77 CATEGORY	Nonprecision/Nonprecision	Nonprecision/Nonprecision	Visual/Visual	Visual/Visual
RUNWAY APPROACH SURFACES	34:1, 34:1	34:1, 34:1	20:1, 20:1	20:1, 20:1
RUNWAY THRESHOLD DISPLACEMENT	50'/35'	50'/35'	None	None
RUNWAY STOPWAY	None	None	None	None
RUNWAY SAFETY AREA	1,000' x 400'	1,000' x 400'	300' x 150'	300' x 150'
RUNWAY OBSTACLE FREE ZONE	200' x 400'	200' x 400'	200' x 400'	200' x 400'
RUNWAY OBJECT FREE AREA (ROFA)	1,000' x 800'	1,000' x 800'	300' x 500'	300' x 500'
RUNWAY SURFACE MATERIAL	Asphalt	Asphalt	Asphalt	Asphalt
RUNWAY SURFACE TREATMENT	None	None	None	None
RUNWAY STRENGTH (in thousand lbs.)	80(S)/116(D)/210(DT)	80(S)/116(D)/210(DT)	17(S)	17(S)
RUNWAY EFFECTIVE GRADIENT	0.4865%	0.4865%	0.2139%	0.2139%
RUNWAY TOUCHDOWN ZONE ELEVATION	1562 MSL, 1575 MSL	1562 MSL, 1575 MSL	1570 MSL, 1573 MSL	1570 MSL, 1573 MSL
RUNWAY MARKING	TDZ, Edge, Centerline	TDZ, Edge, Centerline	Basic Visual	Basic Visual
RUNWAY LIGHTING	MIRL	MIRL	None	MIRL
RUNWAY APPROACH LIGHTING	None	None	None	None
TAXIWAY LIGHTING	MIRL	MIRL	None	MIRL
TAXIWAY SURFACE MATERIAL	Asphalt	Asphalt	Asphalt	Asphalt
TAXIWAY MARKING	Centerline	Centerline	Centerline	Centerline
ELECTRONIC NAVIGATIONAL AIDS	GPS	GPS	None	None
VISUAL NAVIGATIONAL AIDS	VASI-EL (Inoperative)	PAPI-2	None	PAPI-2

¹ Pavement strengths are expressed in Single(S), Dual(D), Dual Tandem(DT), and/or Double Dual Tandem(DDT) wheel loading capacities.
² Taxiway 4 and Taxiway 6



SOURCE:
COOLIDGE MUNICIPAL AIRPORT
Coolidge, Arizona

PERIOD:
Feb. 2, 1984 - Nov. 18, 1984

COMPILED BY:
Henningson, Durham, Richardson, Inc.
Architects - Engineers

RUNWAY END COORDINATES (NAD 83)		
Coolidge Municipal Airport	EXISTING	ULTIMATE
Runway 5	Latitude 32° 56' 01.188" N Longitude 111° 25' 07.234" W	Latitude 32° 56' 01.188" N Longitude 111° 25' 07.234" W
Runway 5 Displaced Threshold	Latitude 32° 56' 01.975" N Longitude 111° 25' 06.725" W	Latitude 32° 56' 01.975" N Longitude 111° 25' 06.725" W
Runway 23	Latitude 32° 53' 28.857" N Longitude 111° 25' 10.807" W	Latitude 32° 53' 28.857" N Longitude 111° 25' 10.807" W
Runway 23 Displaced Threshold	Latitude 32° 53' 28.407" N Longitude 111° 25' 11.192" W	Latitude 32° 53' 28.407" N Longitude 111° 25' 11.192" W
Runway 17	Latitude 32° 56' 21.825" N Longitude 111° 25' 30.135" W	Latitude 32° 56' 21.825" N Longitude 111° 25' 30.135" W
Runway 35	Latitude 32° 55' 44.824" N Longitude 111° 25' 30.135" W	Latitude 32° 55' 44.824" N Longitude 111° 25' 30.135" W

WIND COVERAGE		
	12 MPH	15 MPH
Runway 5-23	90.8%	92.0%
Runway 17-35	92.9%	95.2%
Runways Combined	96.1%	97.8%

Coolidge Municipal Airport

AIRPORT LAYOUT PLAN

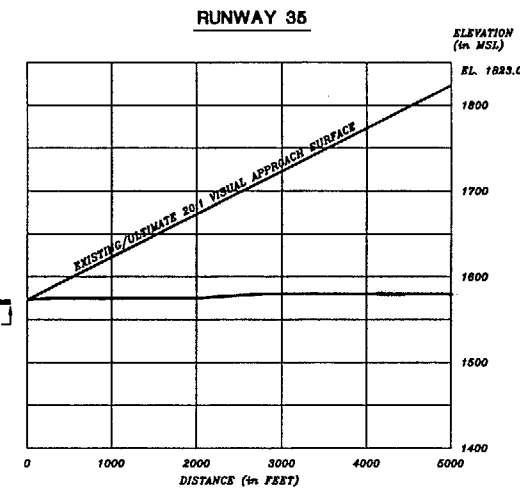
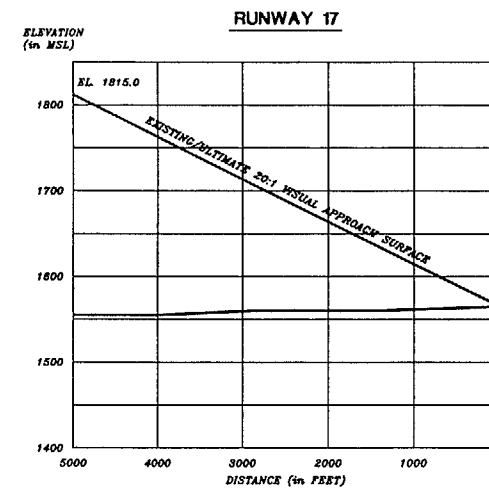
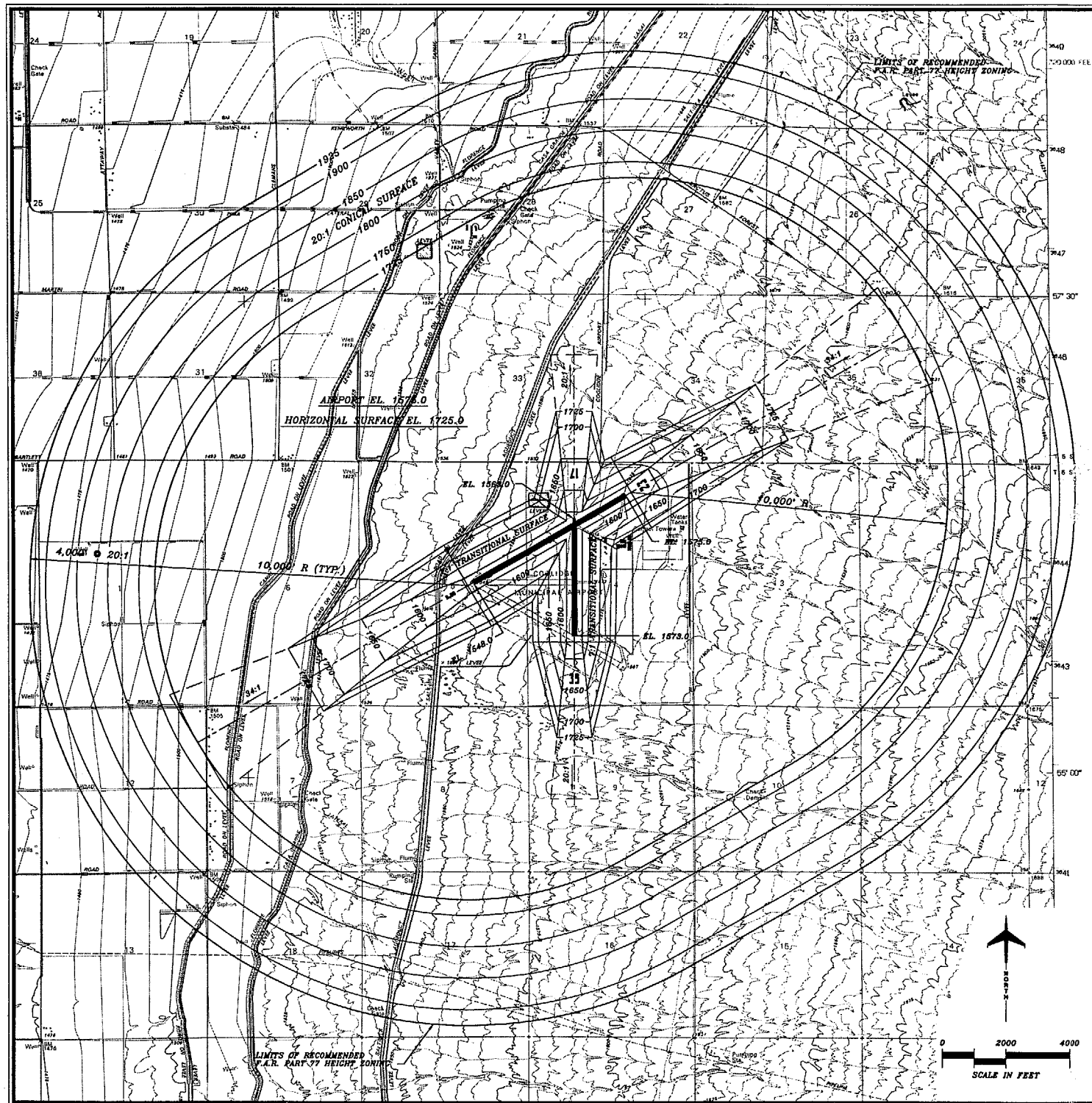
Coolidge, Arizona

PLANNED BY: Christopher M. Kaplan
 DETAILED BY: Larry B. Johnson
 APPROVED BY: James M. Morris

July 17, 1997

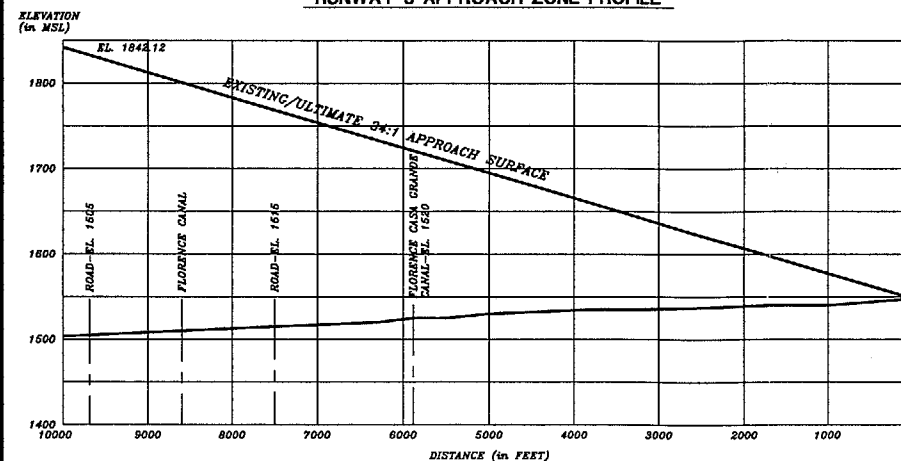
Coffman Associates
Airport Consultants

SHEET 1 OF 6

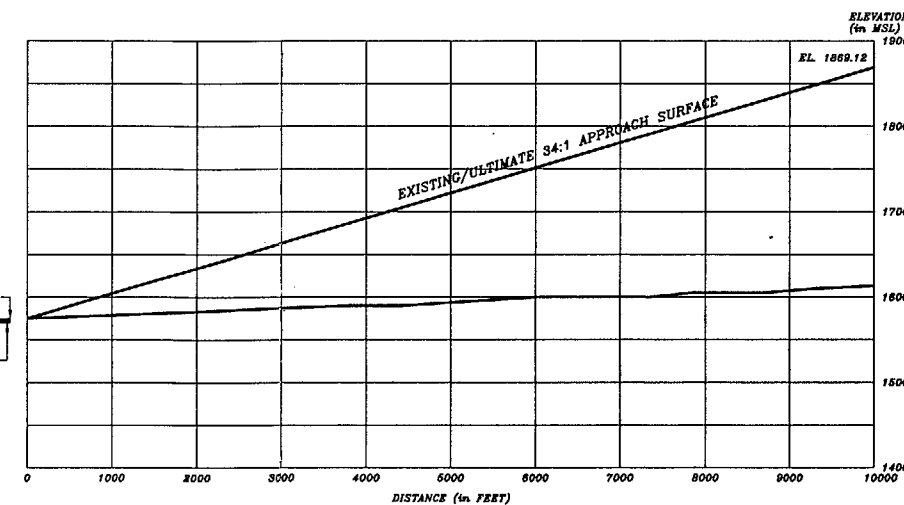
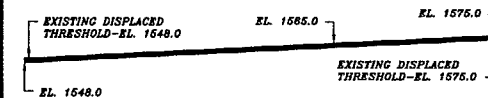
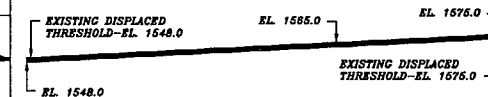
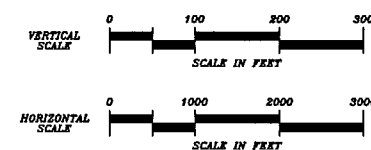


RUNWAY 17-35 APPROACH ZONES PROFILES

RUNWAY 5 APPROACH ZONE PROFILE



APPROACH ZONE PROFILES



RUNWAY 23 APPROACH ZONE PROFILE

OBSTRUCTION TABLE

Object Description	Object Elevation	Obstructed Part 77 Surface	Surface Elevation	Object Penetration	Proposed Object Disposition
NONE FOUND					

OBSTRUCTION LEGEND

- OBSTRUCTION
- GROUP or MULTIPLE OBSTRUCTIONS

GENERAL NOTES:

- Obstructions, clearances, and locations are calculated from ultimate runway and elevations and ultimate approach surfaces, unless otherwise noted.
- Depiction of features and objects within the inner portion of the approach surfaces, is illustrated on the RUNWAY END AREA PLAN, sheet 3 of these plans.

No.	REVISIONS	DATE	BY	APP'D.

COOLIDGE MUNICIPAL AIRPORT

PART 77 AIRSPACE PLAN

Coolidge, Arizona

PLANNED BY: Christopher M. Kuperman

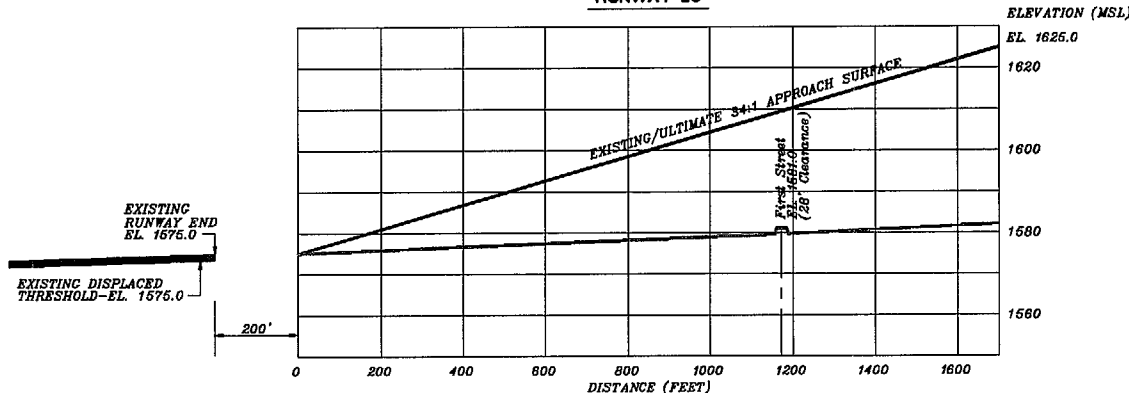
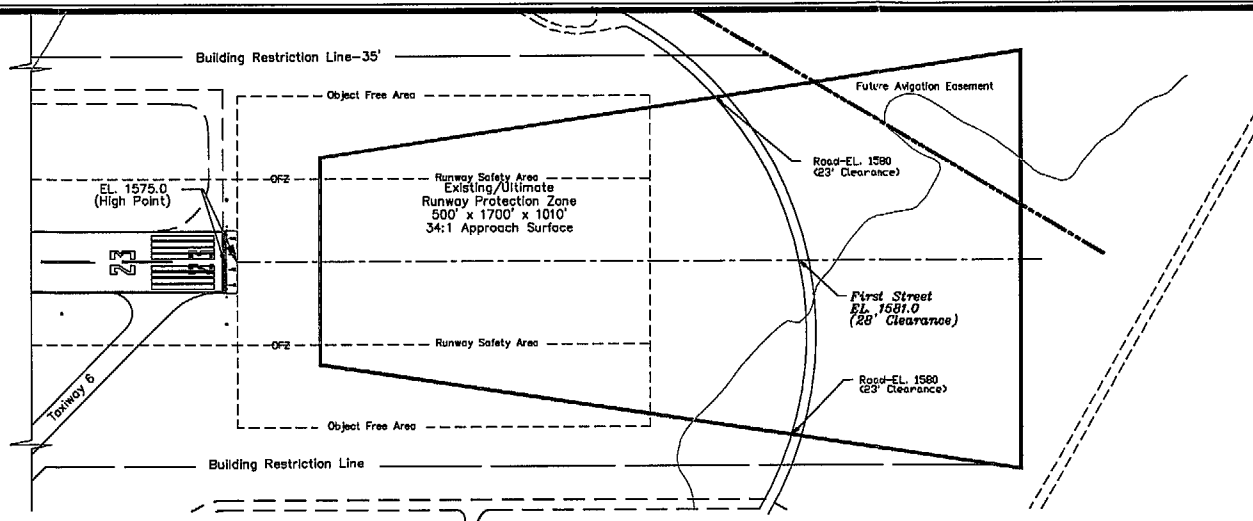
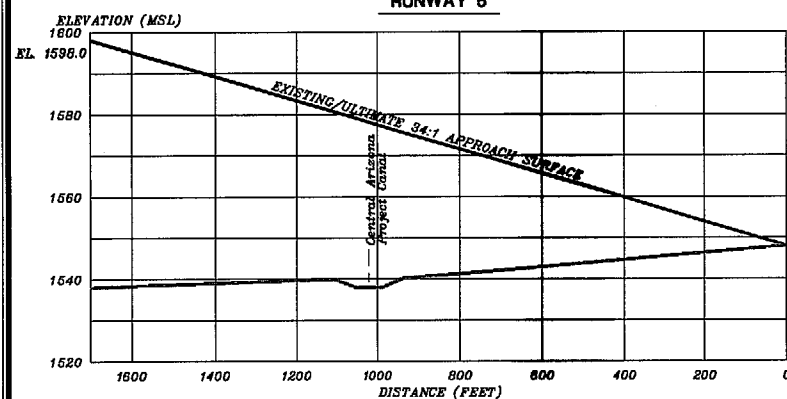
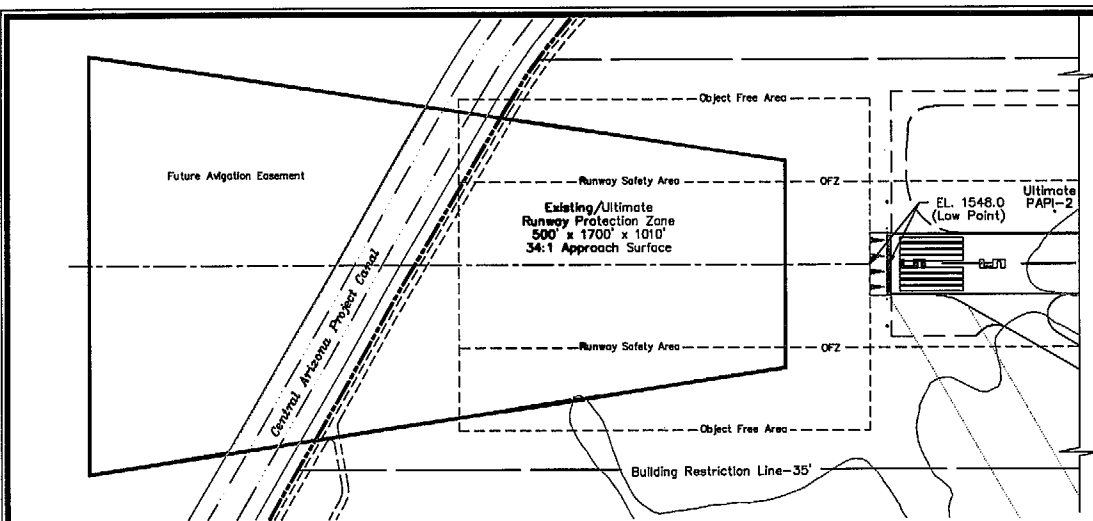
DETAILED BY: Larry D. Johnson

APPROVED BY: James M. Harris

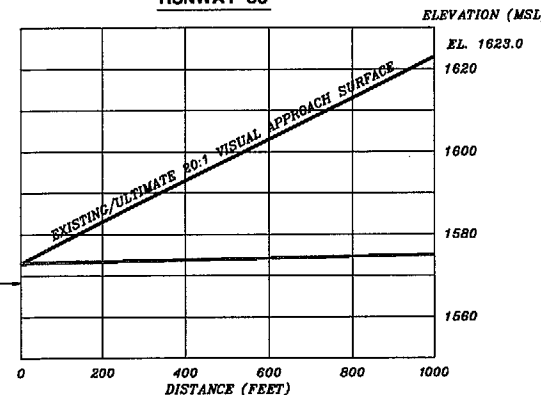
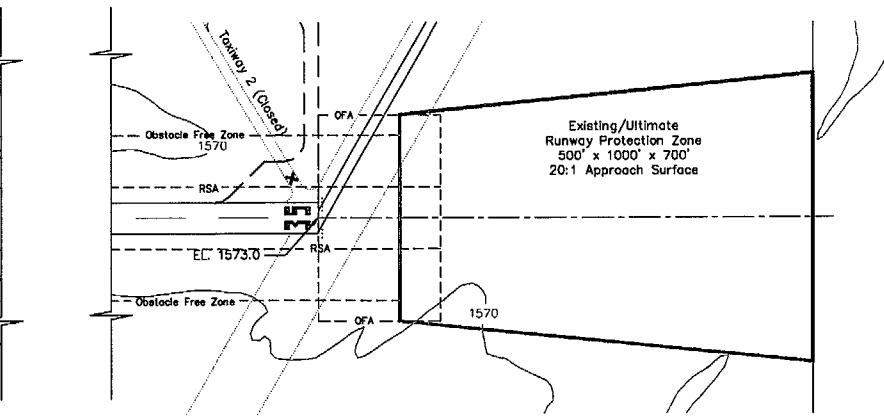
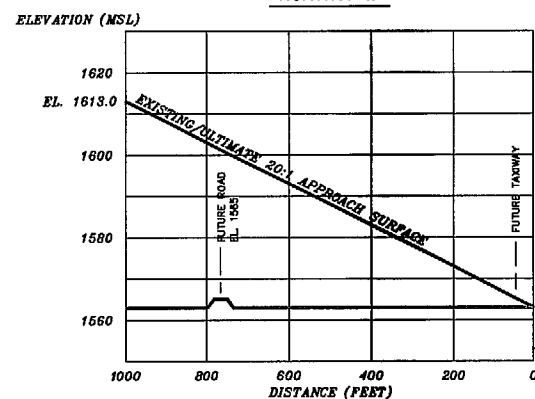
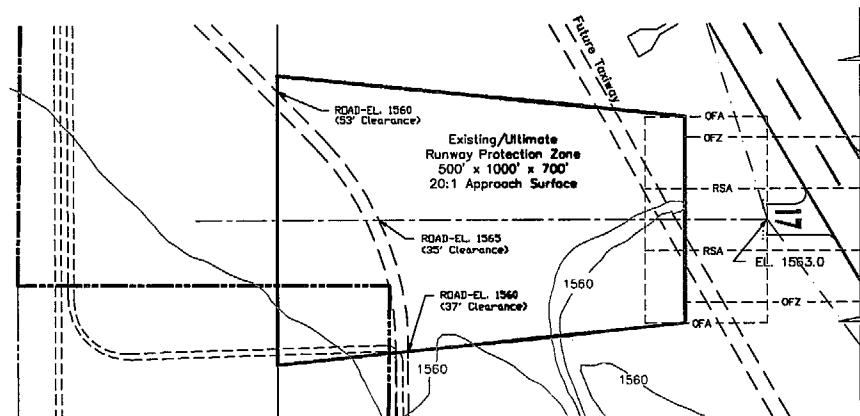
July 18, 1997

SHEET 2 of 6

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RUNWAY 5-23 PROTECTION ZONE PLANS and PROFILES



RUNWAY 17-35 PROTECTION ZONE PLANS and PROFILES

OBSTRUCTION TABLE					
Object Description	Object Elevation	Obstructed Part 77 Surface	Surface Elevation	Object Penetration	Proposed Object Disposition
NONE FOUND	-	-	-	-	-

Runway End Area Data	EXISTING/ULTIMATE		EXISTING/ULTIMATE	
	RUNWAY 5	RUNWAY 23	RUNWAY 17	RUNWAY 35
Approach Visibility Minimums	1 mile	1 mile	Visual	Visual
Runway End Coordinates (NAD-83)	Latitude 32° 56' 01.120" N Longitude 111° 28' 07.234" W	Latitude 32° 56' 22.537" N Longitude 111° 25' 10.807" W	Latitude 32° 56' 21.525" N Longitude 111° 25' 30.193" W	Latitude 32° 56' 44.524" N Longitude 111° 25' 30.193" W
Runway End Elevation	EL 1548.0	EL 1575.0	EL 1553.0	EL 1573.0
Length ± Width of RSA Beyond Runway End	1000' ± 400'	1000' ± 400'	500' ± 150'	500' ± 150'
Length ± Width of OFA Beyond Runway End	200' ± 400'	200' ± 400'	200' ± 250'	200' ± 250'
Length ± Width of OFA Beyond Runway End	1000' ± 600'	1000' ± 200'	300' ± 500'	300' ± 500'
Displaced Threshold Coordinates (NAD-83)	Latitude 32° 56' 01.120" N Longitude 111° 28' 07.234" W	Latitude 32° 56' 22.537" N Longitude 111° 25' 10.807" W	Not Applicable	Not Applicable
Runway Threshold Displacement	50'	35'	None	None
Displaced Threshold Elevation	EL 1548.0	EL 1575.0	Not Applicable	Not Applicable

GENERAL NOTES:

- Obstructions, clearances, and locations are calculated from existing runway end elevations and existing approach surfaces, unless otherwise noted.
- Depiction of features and objects within the primary, transitional, and horizontal Part 77 surfaces, is illustrated on the PART 77 AIRSPACE PLAN, sheets 2 of these plans.
- Depiction of features and objects within the outer portion of the approach surfaces, is illustrated on the APPROACH ZONES PROFILES, sheets 2, of these plans.

HORIZONTAL SCALE IN FEET

0 200 400

VERTICAL SCALE IN FEET

0 20 40

Coolidge Municipal Airport
Coolidge, Arizona

PLANNED BY: Christopher M. Nguyen
DETAILED BY: Larry D. Johnson
APPROVED BY: James M. Morris

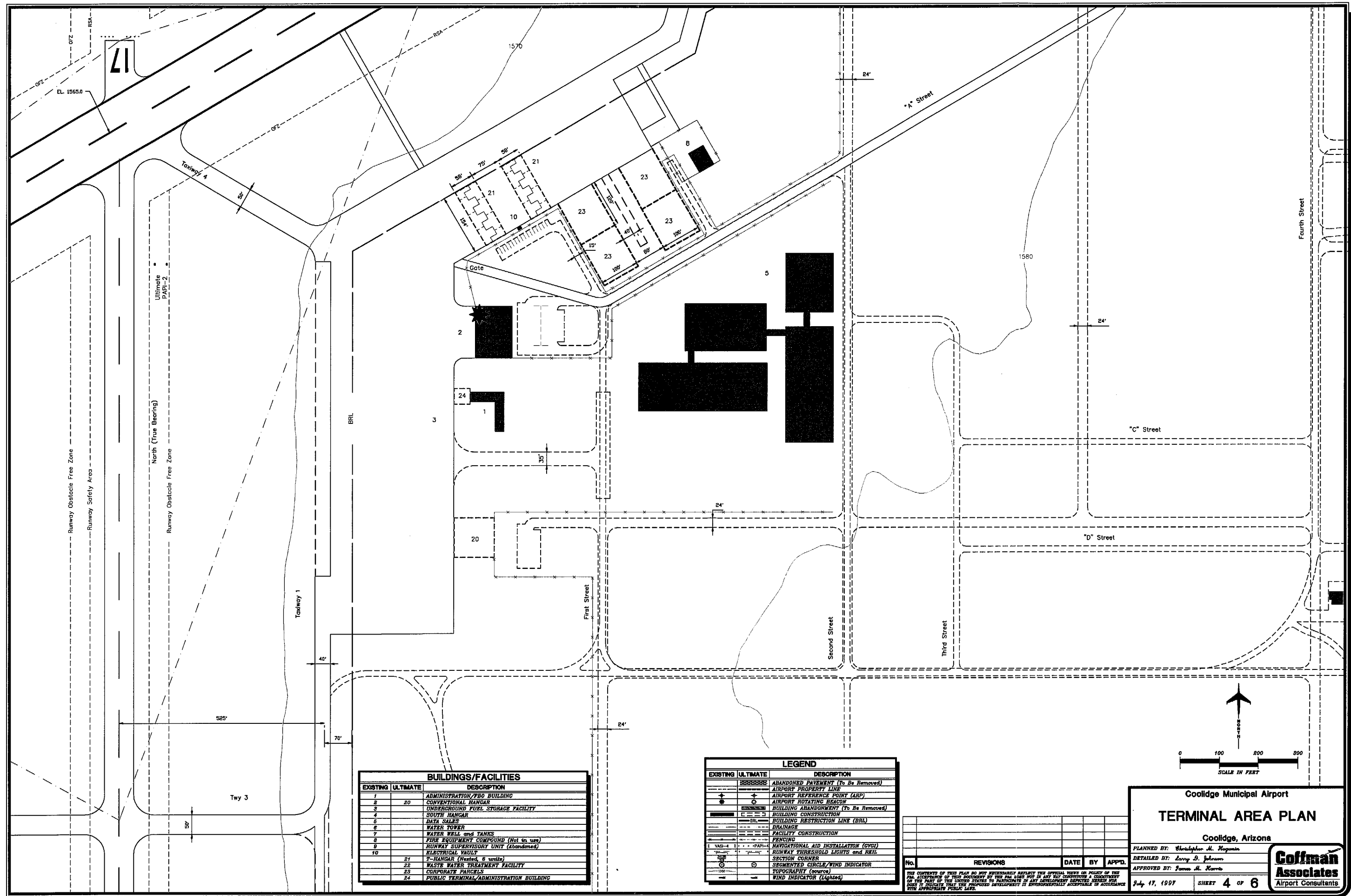
July 17, 1997

SHEET 3 OF 6

Coffman Associates
Airport Consultants

No.	REVISIONS	DATE	BY	APP'D.

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LAND USE LEGEND

AVIATION USE

SUPPORT

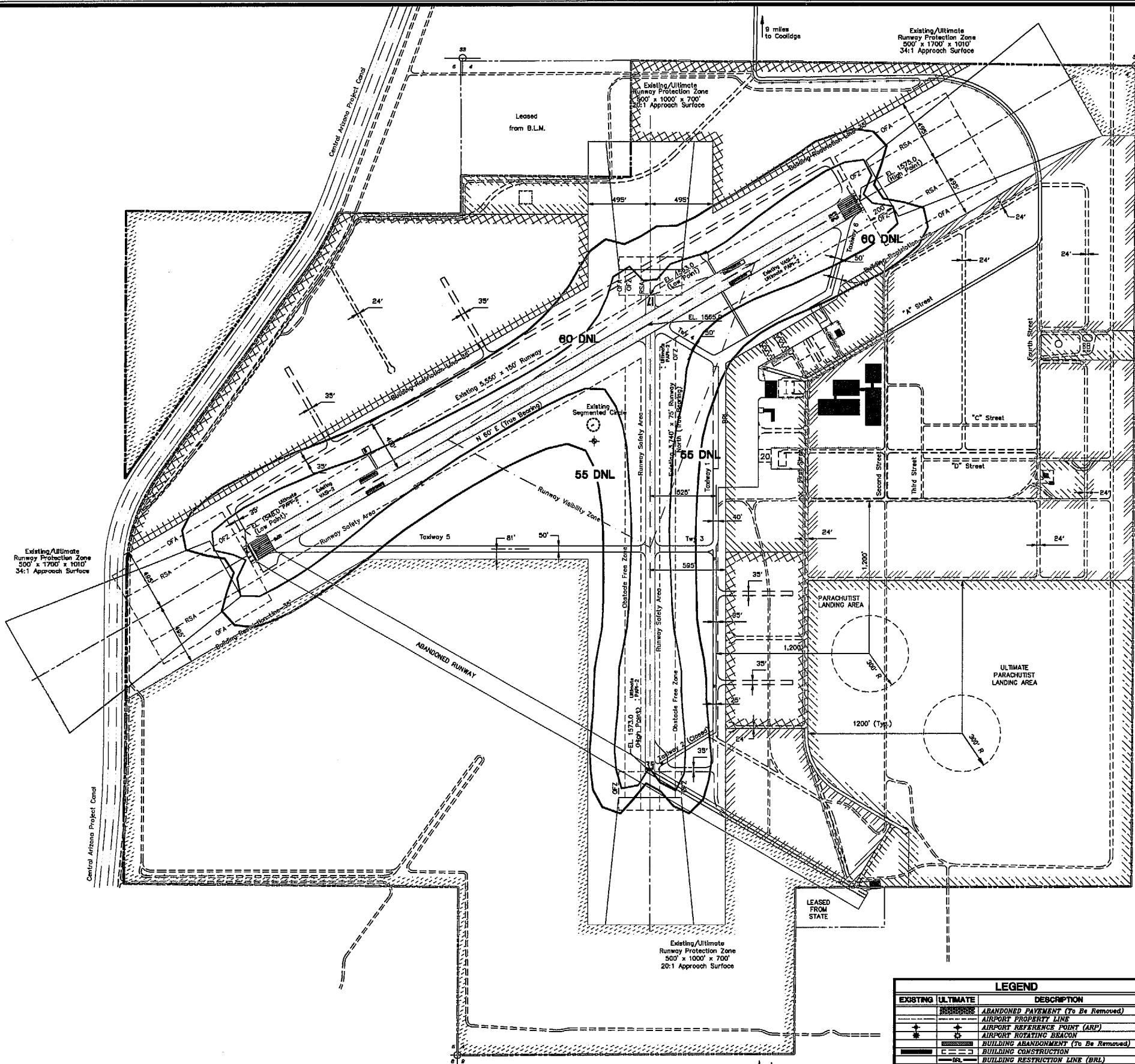
GENERAL AVIATION

COMMERCIAL/INDUSTRIAL

AVIATION RELATED

RECREATIONAL

OPEN SPACE



LEGEND		
EXISTING	ULTIMATE	DESCRIPTION
		ABANDONED PAVEMENT (To Be Removed)
		AIRPORT PROPERTY LINE
		AIRPORT REFERENCE POINT (ARP)
		AIRPORT ROTATING BEACON
		BUILDING ABANDONMENT (To Be Removed)
		BUILDING CONSTRUCTION
		BUILDING RESTRICTION LINE (BRL)
		DRAINAGE
		FACILITY CONSTRUCTION
		FENCING
		NAVIGATIONAL AID INSTALLATION (NAI)
		RUNWAY THRESHOLD LIGHTS and RFL
		SECTION CORNER
		SEGMENTED CIRCLE/WIND INDICATOR
		TOPOGRAPHY (Contours)
		WIND INDICATOR (Lighted)

Coolidge Municipal Airport

AIRPORT LAND USE PLAN

Coolidge, Arizona

PLANNED BY: Christopher M. Hagan

DETAILED BY: Larry B. Johnson

APPROVED BY: James M. Harris

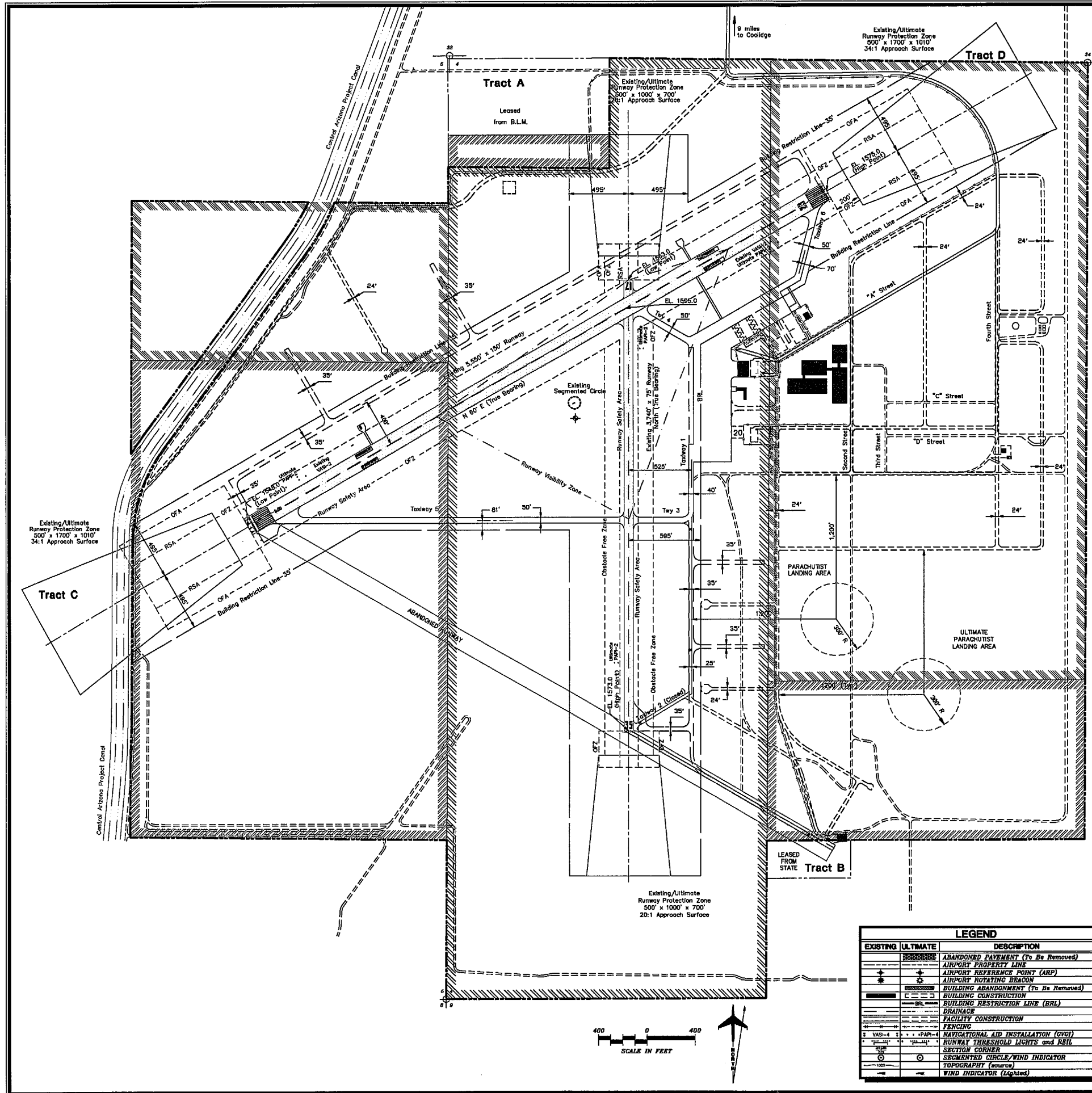
July 17, 1997

SHEET 5 OF 6

Coffman Associates
Airport Consultants

REVISIONS				
No.	DATE	BY	APP'D.	DESCRIPTION

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LEASED PROPERTY		
TRACT	ACRES	
A	± 40	From United States Bureau of Land Management
B	± 5	From Arizona State Land Department
FUTURE AVIGATION EASEMENTS		
TRACT	ACRES	
C	± 12	
D	± 2	

LEGEND	
	Quit Claim Deed 1950
	Sec. 16 Patent 1953
	Sec. 16 Patent 1956

LEGEND	
EXISTING	ULTIMATE
DESCRIPTION	
ABANDONED PAYMENT (To Be Removed)	
AIRPORT PROPERTY LINE	
AIRPORT REFERENCE POINT (ARP)	
AIRPORT ROTATING BEACON	
BUILDING ABANDONMENT (To Be Removed)	
BUILDING CONSTRUCTION	
BUILDING RESTRICTION LINE (BRL)	
DRAINAGE	
FACILITY CONSTRUCTION	
FENCING	
NAVIGATIONAL AID INSTALLATION (NAI)	
RUNWAY THRESHOLD LIGHTS AND RAIL	
SECTION CORNER	
SEGMENTED CIRCLE/WIND INDICATOR	
TOPOGRAPHY (Source)	
WIND INDICATOR (Lighted)	

Coolidge Municipal Airport

AIRPORT PROPERTY MAP

Coolidge, Arizona

PLANNED BY: Christopher M. Kuehn

DETAILED BY: Larry D. Johnson

APPROVED BY: James M. Morris

July 17, 1997

SHEET 6 OF 6

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